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EXAMINER	
SIMITOSKI, MICHAEL J	
ART UNIT	PAPER NUMBER
2134	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/509,413	LEMMA ET AL.	
	Examiner	Art Unit	
	MICHAEL J. SIMITOSKI	2134	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,7-13 and 15-20* is/are rejected.

7)☒ Claim(s) *4,6 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-20 are pending.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Claim Objections

3. Claims 1-17 objected to because of the following informalities: Appropriate correction is required.

a. Regarding claim 1, line 10, "(" should be deleted.

b. Regarding claim 6, the limitation "integral multiple" is believed to be "integer multiple", based on the smoothing factor in the specification.

c. Regarding claim 11, the limitation "so as to" should be removed as it is redundant.

d. Claims 2-5, 7-10 & 12-17 are objected to based on their dependence.

Specification

4. The disclosure is objected to because of the following informalities:

e. The specification, p. 2, line 27, discloses the limitation "integral multiple"; this is believed to be "integer multiple".

Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 15 & 16 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

f. Regarding claim 15, the claim is directed to a "a computer program", which is software, per se, not tangibly embodied. Therefore, it does not fall within one of the statutory classes of invention.

g. Regarding claim 16, the claim is directed to a "record carrier". The specification does not describe the limitation "record carrier", but does describe an embodiment where the program is downloaded (see also claim 17). Therefore, in light of this, it is believed that "record carrier" could encompass a transmission medium (such as through which the claimed program could be downloaded) and therefore the program might not be tangibly embodied and hence does not fall within one of the statutory classes of invention.

7. A note regarding claim 17: The claim presents a claim with no explicit steps. With regard to §101, the Examiner is interpreting the claim as statutory because the resulting available program is a useful, concrete and tangible result.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claim 7-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

h. Regarding claim 7, the specification does not describe a sequence of values being convolved with a window shaping function that has a band limited frequency behavior and a smooth temporal behavior, such that one of ordinary skill in the art could make such a function.

i. Regarding claim 8, the specification does not describe the terms "symmetric temporal behavior" or "anti-symmetric temporal behavior" such that one having ordinary skill in the art could create a window function having that behavior.

j. All claims addressed below are addressed as best understood.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 3, 7 & 8 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

k. Regarding claim 3, the claim is unclear because it recites "wherein there is an inter-frame overlap", but does not describe what is overlapping.

l. Regarding claim 7, the limitation "smooth temporal behavior" is indefinite as it appears to be implementation-specific and a term of degree.

m. Regarding claim 8, the claim is unclear because the use of "symmetric or an anti-symmetric" appears to disclose symmetric or non-symmetric. Therefore, the claim covers all circumstances.

n. Regarding claim 16, the claim is unclear because the claim recites a "data carrier" comprising only program code. As such, it is unclear if the data carrier is itself program code only.

o. All claims addressed below are addressed as best understood.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1-3, 5 & 10 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 7,114,071 to Chmounk et al. (**Chmounk**).

Regarding claim 1, Chmounk discloses a method of compensating for offset in a received signal (col. 9, lines 15-16), the signal being modified by a sequence of symbols (col. 5, lines 25-28), each symbol extending over Ts signal samples (col. 6, lines 14-15), the method comprising the steps of (a) dividing the received signal into frames (col. 9, lines 29-31), (b) dividing each

frame into a plurality of Nb sub-frames (sub-bands, col. 11, lines 26-27), (c) forming Nb sequences of values (power values for each window of a sub-band, col. 11, lines 48-49), the values being derived from the corresponding sub-frame within each frame (derived from sub-band windowing, col. 11, lines 50-53) and (d) taking said Nb sequences as successive estimates of a frame sequence correctly aligned to the sequence of symbols (each power value is used to compute a difference value, which is an estimation of the watermark value, col. 9, lines 55-64).

Regarding claim 2, Chmounk discloses wherein each frame is of predetermined length Ts (samples, col. 5, lines 25-26).

Regarding claim 3, Chmounk discloses wherein there is an inter-frame overlap (deeply overlapping, col. 12, lines 28-31).

Regarding claim 5, Chmounk discloses wherein Nb lies within the range 2 to 8 (3 powers, col. 11, lines 51-53).

Regarding claim 10, Chmounk discloses wherein said offset is a time offset (col. 9, lines 15-16 & col. 12, lines 26-33).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chmounk**, as applied to claim 1 above, in view of U.S. Patent 6,674,876 to Hannigan et al. (**Hannigan**).

Regarding claim 9, Chmounk lacks wherein said sequence of symbols comprises a sequence of at least one of raised cosine functions or bi-phase functions. However, Hannigan teaches a watermarking system where when taking a windowed analysis (as Chmounk does), using a Hanning windows (raised cosine) reduces the frequency representation of the window versus the signal (col. 3, lines 26-37). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Chmounk to apply the windowing function (applied to both the frames and the data embedded into the frames in Chmounk) as a Hanning window. One of ordinary skill in the art would have been motivated to perform such a modification to reduce the frequency representation of the window versus the signal, as taught by Hannigan (col. 3, lines 26-37).

16. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chmounk**, as applied to claim 1 above, in view of U.S. Patent 6,330,673 to Levine et al. (**Levine**).

Regarding claim 11, Chmounk lacks processing each estimate as though it were the correctly aligned frame sequence, determine which estimate is the best estimate. However, Levine teaches that to overcome offsets (col. 24, lines 6-10), multiple iterations of a match (estimate) can be correlated (col. 25, lines 41-46) where at each iteration, a comparator determines whether the correlation is the best correlation so far (col. 25, lines 56-60). This allows the best correlation to be used in the eventual extraction of the watermark (col. 24, lines 33-36). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Chmounk to process each estimate as though it were the correctly aligned frame sequence, to determine which estimate is the best estimate. One of

ordinary skill in the art would have been motivated to perform such a modification to account for offsets in the sequence and determine the best correlation for extraction, as taught by Levine.

Regarding claim 12, Chmounk lacks the claimed steps. However, Levine discloses wherein the best estimate is assumed to be the first estimate that (col. 25, lines 41-46), when processed, exceeds one or more predetermined conditions (determining if the correlation is better, col. 25, lines 56-60) said processing of estimates stopping once the best estimate has been determined (the offset is used as the estimate, col. 26, lines 6-11). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Chmounk such that the best estimate is assumed to be the first estimate that, when processed, exceeds one or more predetermined conditions said processing of estimates stopping once the best estimate has been determined. One of ordinary skill in the art would have been motivated to perform such a modification to account for offsets in the sequence and determine the best correlation for extraction, as taught by Levine.

Regarding claim 13, Chmounk lacks correlating each of said estimates with a reference corresponding to said sequence of symbols and taking the estimate with the maximum correlation peak value as the best estimate. However, Levine teaches that to overcome offsets (col. 24, lines 6-10), each iteration is correlated to a basis signal (reference corresponding to said sequence of signals) and the estimate with the maximum correlation peak value is taken as the best estimate (of the location, col. 25, lines 56-59). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Chmounk to include correlating each of said estimates with a reference corresponding to said sequence of symbols and taking the estimate with the maximum correlation peak value as the best estimate. One of

ordinary skill in the art would have been motivated to perform such a modification to account for offsets in the sequence and determine the best correlation for extraction, as taught by Levine.

17. Claims 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chmounk in view of one having ordinary skill in the art.

Regarding claim 15, Chmounk lacks a program. However, it is well known in the arts to embed/extract watermarks using a program running on a processor (to automate the manual process) to achieve high speed and efficiency. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Chmounk to include a program stored on a storage medium to perform the method described in Chmounk. One of ordinary skill in the art would have been motivated to perform such a modification to achieve high speed and efficiency, as is known in the art.

Regarding claims 16 & 17, Chmounk lacks a program as described above. However, for the reasons described above, including the method of Chmounk in program form is obvious to one having ordinary skill in the art. Further, distributing the program, either on a record carrier or via a download (for example, the Internet) are also well known concepts to one having ordinary skill in the art at the time the invention was made. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Chmounk to distribute a program performing the method of Chmounk, either via a record carrier or via the Internet. One of ordinary skill in the art would have been motivated to perform such a modification because both methods are well known for the purpose of mass sales and distribution.

Regarding claim 18, the claim is substantially equivalent to claim 1, but in apparatus form. Chmounk lacks an apparatus. However, it is well known in the arts to embed/extract watermarks using an apparatus (to automate the manual process) to achieve high speed and efficiency. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Chmounk to include a divider and a processor, as claimed to perform the method described in Chmounk. One of ordinary skill in the art would have been motivated to perform such a modification to achieve high speed and efficiency, as is known in the art.

Regarding claim 19, Chmounk lacks a buffer arranged to store the Nb sequences. However, as the sequences (power values) are produced and used in Chmounk, an automated implementation (shown as obvious above) would require a buffer to store the values. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Chmounk to include a buffer arranged to store the Nb sequences. One of ordinary skill in the art would have been motivated to perform such a modification to allow automation of Chmounk's process, as is well known in the art.

Regarding claim 20, Chmounk lacks a decoder comprising the apparatus of claim 18. However, as described above with respect to claim 18, it is well known in the arts to embed/extract watermarks using an apparatus (to automate the manual process) to achieve high speed and efficiency. As the Chmounk process includes an extraction step (decoding, col. 9), it would be obvious for the apparatus that performs the extraction step to be in a decoder, as that is the purpose of this step. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Chmounk to include, in a decoder, an

apparatus that performs the disclosed process. One of ordinary skill in the art would have been motivated to perform such a modification to decode the watermark, as is intended by Chmounk's invention.

Allowable Subject Matter

18. Claims 4, 6 & 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter:

p. Regarding claim 4, the prior art of record fails to teach or disclose, either alone or in combination, wherein each sub-frame overlaps an adjacent sub-frame, in combination with the other element of the claim. In Chmounk, the sub-frames are distinct frequency bands, and hence the limitation is not disclosed.

q. Regarding claim 6, the prior art of record fails to teach or disclose, either alone or in combination, wherein the sequence of symbols (watermark) comprises Lw symbols, the received signal being divided into LF frames, wherein LF is an integral multiple of Lw, in combination with the other elements of the claim.

r. Regarding claim 14, the prior art of record fails to teach or disclose, either alone or in combination, wherein once a first best estimate has been determined for a first signal or portion of a signal, the method is repeated for a further received signal or portion of a signal, the estimates from said further signal being processed in an order dependent upon said first best estimate, in combination with the other elements of the

claim. Levine (see cited portions above) discloses storing a best estimate for a first portion (offset) and then repeating this for different offsets, but lacks the estimates from said further signal being processed in an order dependent upon said first best estimate.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

s. The Muratani reference is cited for teaching watermark detecting using x and y shifts, see ¶91-151.

t. The Moskowitz reference is cited for teaching Z-transform watermarking, where band-limiting is performed to process a signal in discrete values (col. 6, lines 45-67). Further, Moskowitz teaches windowing and overlapping windows which can help to smooth discontinuities between windows (col. 9, lines 15-49).

u. The Johnston reference is cited for teaching using overlapping windows to embed a watermark (col. 4+).

v. The van der Veen reference is cited for teaching time-based watermarking (whole document).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL J. SIMITOSKI whose telephone number is (571)272-3841. The examiner can normally be reached on Monday - Thursday, 6:45 a.m. - 4:15 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kambiz Zand can be reached on (571) 272-3811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

April 11, 2008
/Michael J Simitoski/
Primary Examiner, Art Unit 2134